

Determination of Effectiveness Traditional Cosmetics of Coconut Oil and Turmeric as Anti-Dandruff

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ABSTRACT

Dandruff is a disorder that occurs on the scalp, can be experienced by men or women. Dandruff is a type of inflammatory disease in the scalp type of oily. Actually this disorder is mild but very disturbing and reduce the attractiveness of a person because the head and hair become dirty and result in hair loss. One solution is the use of traditional cosmetics, which will be lifted as our research materials. The ingredients used are coconut oil (*Oleum cocos*), as the basic ingredients and turmeric as the active ingredients, which are used as hair oil. Efficacy of turmeric is as anti-inflammatory and anti-fungal. While coconut oil as anti-inflammatory. This synergy will be tested in the form of clinical test, microbiology test. The clinical trials selected male and female respondents aged 20-40 years who experience dandruff for at least 1 month. This test will be compared to its effectiveness with the synthetic product of ketoconazole. The conclusion of the research is the coconut oil ingredient with turmeric active ingredient as anti fungi has the effect of less equal to 2% ketoconazole shampoo on itching, hair loss and scales caused by fungus *Pitysporum ovale* as the cause of dandruff

Keywords: *traditional cosmetics, anti-dandruff oil*

I. INTRODUCTION

Dandruff is a disorder that occurs on the scalp, can be experienced by men or women. Dandruff is a type of inflammatory disease of the oily scalp. Actually this disorder is classified as mild but very disturbing and reduces a person's attractiveness because the head and hair get dirty and result in hair loss.

Many solutions can be chosen to overcome dandruff. It can be the selection of the right type of shampoo or the efforts to use topical drugs for the scalp. This topical drug is usually applied to the scalp as anti-fungal and anti-inflammatory. The active ingredients used as a drug are quite diverse. For examples: sulfur, resorcinol, salicylic acid, which serves to suppress the occurrence of scales. Then for anti-fungus, the ketoconazole group can be used. In addition to ingredients that are synthetic, there are several natural ingredients that are also effective to reduce dandruff. One of them is turmeric (*Curcuma longa* or *Curcuma domestica*), as a spice in our kitchen. Turmeric is effective for treating inflammation and fungi on the skin. In some traditional herbs, turmeric is used for scrubs or scrubs.

For this reason, in this study a traditional herb made from herbal ingredients was made Turmeric as an active ingredient, which is mixed with coconut oil as a basic ingredient (*vehiculum*) and kenanga flowers and fragrant pandanus as fragrance ingredients. The herb will be used as a traditional oil to help deal with dandruff hair.

II. OBJECTIVES OF THE RESEARCH

Determine the effectiveness of traditional cosmetics hair oil with active ingredients Turmeric (*Curcuma domestica*) as an anti-dandruff. Effectiveness would be measured by the reduction in symptoms of hair loss, itching, the nature and number of scales. To measure its success would be compared with the use of ketoconazole shampoo. Besides , it would also be seen the type of fungus as the cause of ketoconazole users and coconut- tumeric oil users . If there were similarities in the types of fungus, conclusions can be drawn about the effectiveness of coconut oil with active ingredients of turmeric when compared to ketoconazole shampoo.

III. LITERATURE REVIEW

Dandruff or *Pyitiriasis sika* is mostly suffered by people in Indonesia who have a tropical climate, high temperatures and humid air. This disease is usually suffered by those who have oily skin constitutionally (*diatese seborrhoic*), at the age of 30-40 years and are considered gender even though some literatures mentioned men are affected than women. (John Fedor, *Milady's Standard Cosmetology*).

There are 3 main factors causing dandruff, i.e.: (Sjarif M. Wasitatmaatmaja., *Dermatologi Kosmetika*)

1. Sebaceous gland secretions

2. The role of fungal microflora, namely: *Malassezia globosa* and *Malassezia restricta* etc
3. Sensitivity of scalp

Factors that increase oil levels on the scalp.

- a. Certain races that have oily skin properties.
- b. Genetic / certain derivatives that have excessive skin fat.
- c. Diets / foods that contain high fat content.
- d. Climate and weather that support the production of pallid glands
- e. Psychological stress that causes increasing oil gland production.
- f. A certain age, when the oil glands produce the most
- g. Certain drugs that can stimulate the oil glands.

Factors that cause increasing normal microflora :

- a. Poor scalp hygiene
- b. Chronic systemic disease that causes decreased skin hygiene.
- c. Medicines that reduce the body's immune system and skin.

Patient sensitivity factors to the two factors above that cause increasing the formation and desquamation of epidermal keratin cells .

Dandruff scalps usually cause itching during the day, especially if it is hot during the day, the scalp sweats, the activity of the oil glands on the scalp will increase. This increasing is accompanied by inflammation due to fungus causes intense itching, and makes the patient scratch his head. Scratching the head causes the release of the epidermal keratin layer which will stick to the hair shaft or fall on the shoulder. This is called scales (squama) in dandruff. And cause hair loss, especially on the top of the head (vertex), which if it lasts a long time will cause baldness.

There are several principles in dealing with dandruff i.e :

1. Reducing oil on the surface of the skin or decreasing the amount of sebum secretion.
2. Decreasing the number of microbes that cause dandruff.
3. Reducing symptoms: scales, itching and hair loss.

Treatment can be done topically, i.e :

1. Using a cream or alcoholic solution that contains strong or less potent corticosteroids.
2. Sulfur, resorcinol, salicylic acid in shampoo.
3. Selenium sulfide, zinc pirition, povidone iodine, propyleneglycol and azole groups which are antifungal.

In this study, a effectiveness test for dandruff treatment was carried out using traditional cosmetics in the form of hair oil made from coconut oil with turmeric active ingredients. We know that there are many natural ingredients that have anti-fungal and anti-inflammatory properties, one of which is turmeric.

Ingredient of tumeric rhizome are :

Curcuminoids (curcumin, desmetoxicurcumin, and bis-desmetoxy-curcumin), oleoresin essential oil (5 ml / kg), non-polar fractions containing, among others, α -curcumene, germacron and zederon, semipolar fractions containing xantorizol and curcuminoid, and starch.

As an oral drug (drinking), tumerics use for digestive disorders, gastric pain, bleeding, diarrhea, wind decay, the stomach feels full, and low appetite.

The uses of topical are for pain, fungus, scratches, bitten by leeches, eye infections, inflammation of the skin and inflammation of the mucous membranes of the mouth.

Besides the herb turmeric rhizome, used coconut oil as a basic ingredient. Coconut oil has ingredients:

- a. Lauric acid, myristic acid, palmitic acid, caprilic acid, stearic acid, linoleic acid, caproic acid, oleic acid, starvulat and malvalic acid
- b. Delta-octalactone (essential oil)

Coconut oil can heal wounds and infections. In the cosmetics industry coconut oil is often used as an ingredient in soaps, shampoos and ointments.

IV. RESEARCH METHOD

Traditional cosmetics to be made was based hair care cosmetics coconut oil, active ingredients such as turmeric which also functions as a dye, as fragrance used pandan leaf and ylang-ylang flower. This cosmetics is made in a simple way in accordance with the terms used, namely traditional cosmetics. Here are the measurements of each ingredient:

- 2 quite old coconuts, were shredded and then steamed for 30 minutes
- 1 kg of turmeric, were peeled and washed, then shredded.
- A handful of cananga flowers
- 4 pandan leaves
- 3 liters of water

How to make :

- Grated steamed coconut, mixed with water, put turmeric grated and then squeezed until the coconut milk comes out.
- Cook coconut milk with pandanus and cananga flowers until the oil comes out
- Then cool and strain.

This herb is used by rubbing it on the entire scalp. Wait for 15 minutes, then shampoo with a regular shampoo.

Furthermore, the tests that will be carried out are:

- a. Mycological test of respondents who were treated with coconut oil and respondents who were treated with ketaconazole shampoo.
- b. Clinical trials to be compared with ketaconazole shampoo. This test will involve male and female

respondents, aged 20-40 years with the type of oily scalp, dandruff and hair loss complaints as well and also itchy. This test would be carried out for 1 month, carried out evaluation and monitoring every week. The complaints that are evaluated are:

- The condition of scales from dandruff

- Itching
- Hair loss

The hypotheses of this research were: There were differences in the effectiveness of anti-dandruff between traditional ingredients made from turmeric and synthetic ingredients ketoconazole.

V. RESULTS AND DISCUSSION

a. Examination data for hair loss symptoms in male respondents treated with shampoo

Table 1. Data on the number of male respondents with shampoo treatment who experienced hair loss

	Examination	Hair Loss			No Hair Loss	
		<5	5-10	>10	Σ	%
1	1 st Exam	2	4	2	2	20
2	2 nd Exam	4	1	--	5	50
3	3 rd Exam	--	--	--	10	100

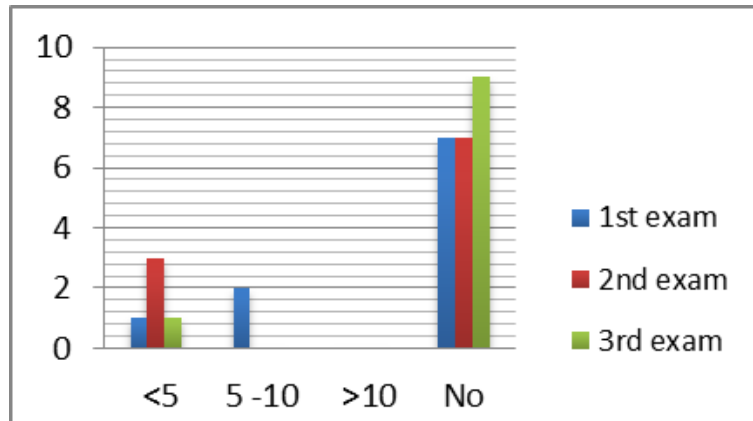


Fig 1. Hair Loss Symptoms in Male Respondents with Shampoo Treatment

b. Data on the examination of symptoms of hair loss in male respondents treated with coconut oil

Table 2. Data on the number of male respondents treated with coconut oil who experienced hair loss

	examination	Hair Loss			No Hair loss	
		<5	5-10	>10	Σ	%
1	1 st exam	1	2	--	7	70
2	2 nd exam	3	--	--	7	70
3	3 rd exam	1	--	--	9	90

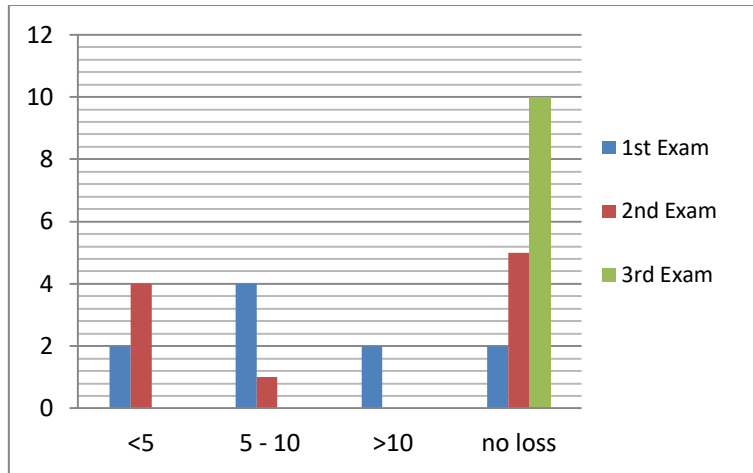


Fig 2. Symptoms of Hair Loss in Male Respondents with the Treatment of Coconut Oil

c. Data examination of the symptoms of hair loss in female respondents with shampoo treatment

Table 3. Data on the number of female respondents with shampoo treatment who experienced hair loss

Examination	Hair Loss			No Hair Loss	
	<5	5-10	>10	Σ	%
1 1 st Exam	2	3	5	--	0
2 2 nd Exam	6	2	1	1	10
3 3 rd Exam	5	1	--	4	40

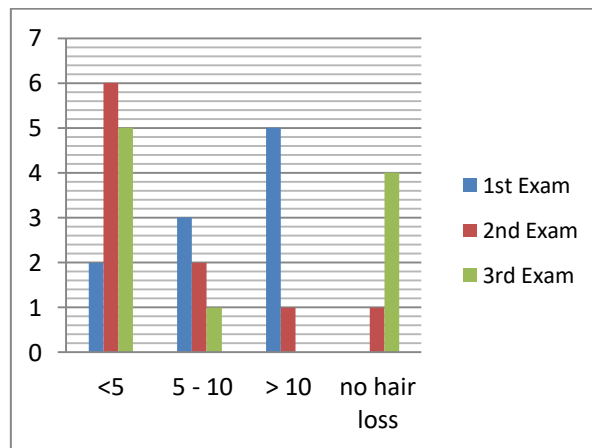


Fig 3. Hair Loss Symptoms in Female Respondents with Shampoo Treatment

d. Data on the examination of hair loss symptoms in female respondents treated with coconut oil
 Table 4. Data on the number of female respondents treated with coconut oil who experienced hair loss

	examination	Hair Loss			No Hair Loss	
		<5	5-10	> 10	Σ	%
1	1 st exam		2	8	--	0
2	2 nd exam	2	8	--	--	0
3	3 rd exam	4	--	--	6	60

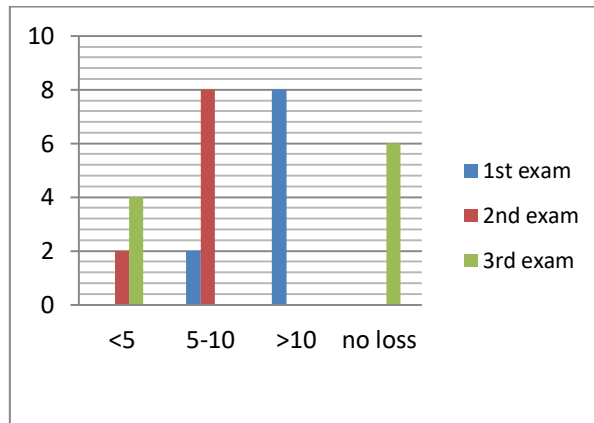


Fig.4. Symptoms of Hair Loss in Female Respondents by Treating Coconut Oil

e. Data examination of the symptoms of itchy scalp in male respondents with shampoo treatment
 Table 5. Data on the number of male respondents with shampoo treatments who experience itchy symptoms

No	examination	Itchy	No itchy
1	1 st exam	10	--
2	2 nd exam	4	6
3	3 rd exam	--	10

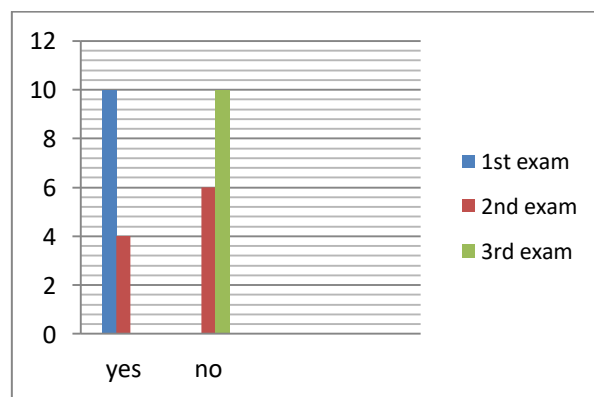


Fig 5. Itching Symptoms in Male Respondents with Shampoo Treatment

f. Examination data for scalp itching symptoms in male respondents treated with coconut oil

Table 6. Data on the number of male respondents with the treatment of coconut oil who experience symptoms of itching

No	Examination	Itchy	No itchy
1	1 st exam	10	--
2	2 nd exam	2	8
3	3 rd exam	--	10

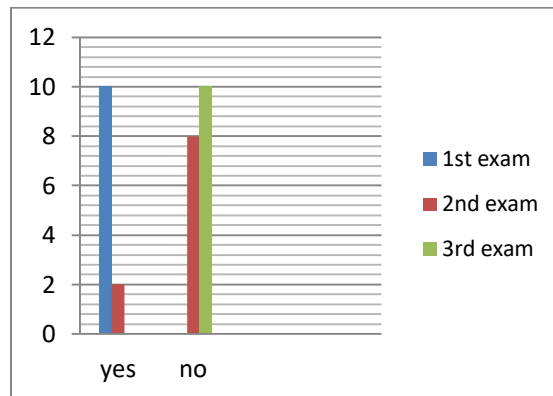


Fig 6. Itching Symptoms in Male Respondents with Coconut Oil treatment

g. Data examination of the symptoms of itchy scalp in female respondents treated with shampoo

Table 7. Data on the number of female respondents with shampoo treatment experiencing itchy symptoms

No	examination	itchy	No itchy
1	1 st exam	6	4
2	2 nd exam	2	8
3	3 rd exam	--	10

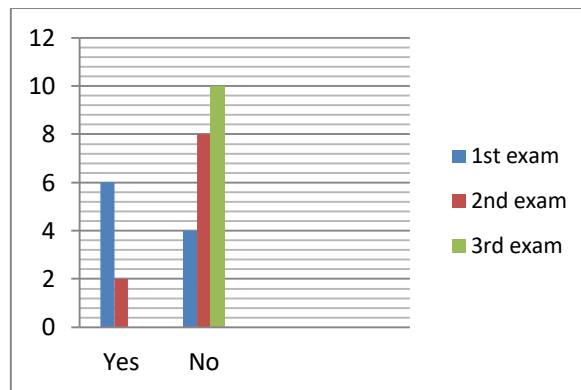


Fig7. Itching symptoms in female respondents treated with shampoo

h. Data on examination of symptoms of itchy scalp in female respondents treated with coconut oil

Table 8. Data on the number of female respondents treated with coconut oil who experience symptoms of itching

No	Examination	itchy	No itchy
1	1 st exam	8	2
2	2 nd exam	3	7
3	3 rd exam	--	10

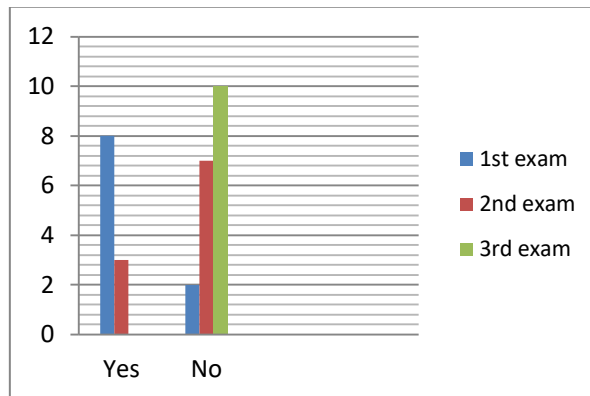


Fig 8 Itchy symptoms of female respondents with coconut oil treatment

i. Examination data on the condition and number of scales in male respondents treated with shampoo

Table 9. Data on the nature of scales and number of scales in male respondents treated with shampoo

No	examination	\sum scales			Scale condition		
		n	< 5	> 5	small	big	mix
1	1 st exam	--	8	2	8	2	--
2	2 nd exam	1	9	--	9	--	--
3	3 rd exam	4	4	--	4	--	--

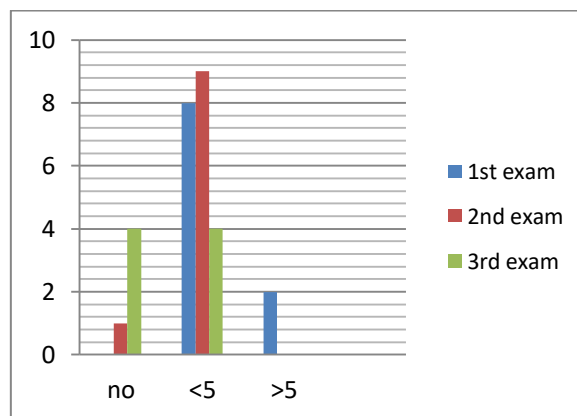


Fig.9 The number of scales in male respondents treated with shampoo

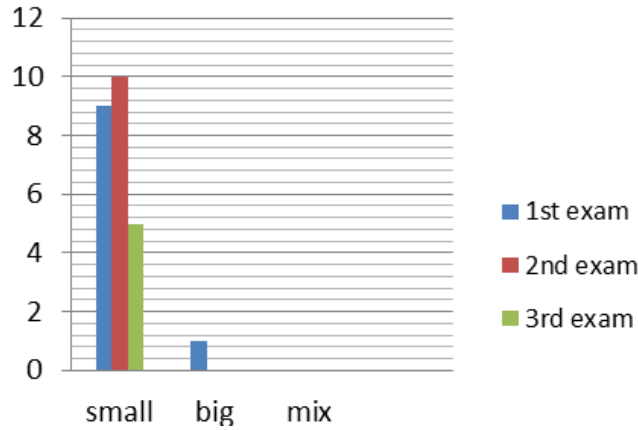


Fig. 10 The scales condition of respondents in men with shampoo treatment

j. Examination data on the condition and number of scales in male respondents treated with coconut oil
 Table 10. Data on the nature of scales and number of scales in male respondents treated with coconut oil

No	Examination	Σ Scales			Scale condition		
		no	<5	>5	small	big	mix
1	1 st exam	--	8	2	6	3	1
2	2 nd exam	1	9	--	9	--	--
3	3 rd exam	10	--	--	--	--	--

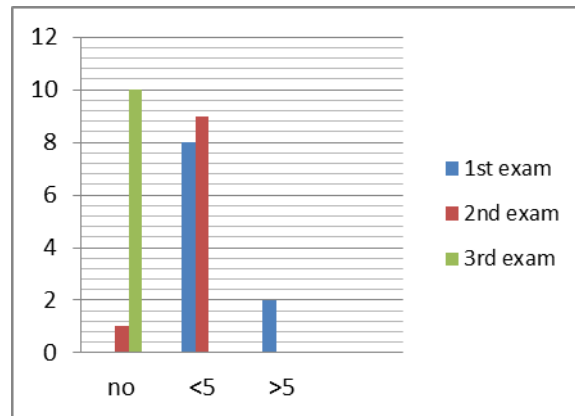


Fig.11 The number of scales in male respondents treated with coconut oil

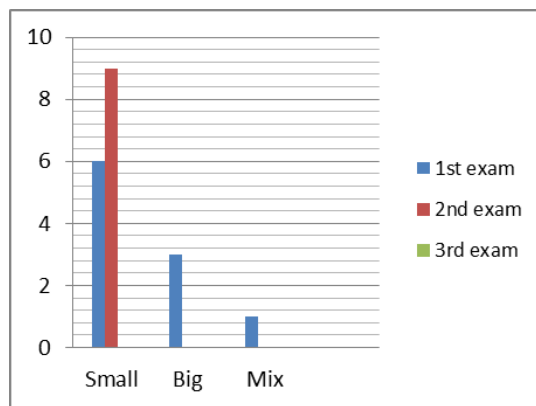


Fig. 12 The scale conditions of the male respondents treated with coconut oil

k. Examination data on the condition and number of scales in female respondents treated with shampoo
 Table 11. Data on the nature of scales and number of scales in female respondents with shampoo treatment

No	examination	\sum scales			Scale condition		
		no	<5	>5	small	Big	Mix
1	1 st exam	--	5	5	6	3	1
2	2 nd exam	--	10	--	10	--	--
3	3 rd exam	6	4	--	4	--	--

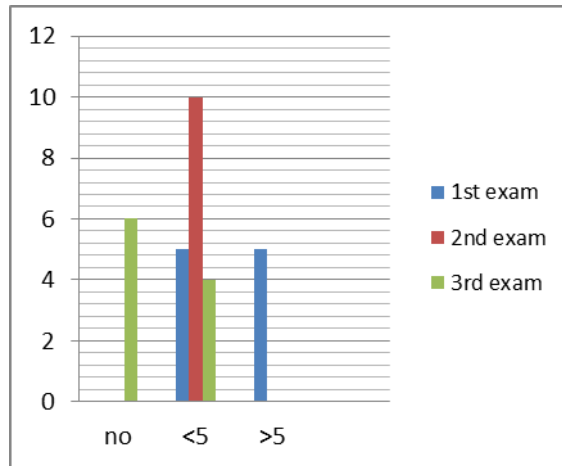


Fig.13 The number of scales on female respondents treated with shampoo

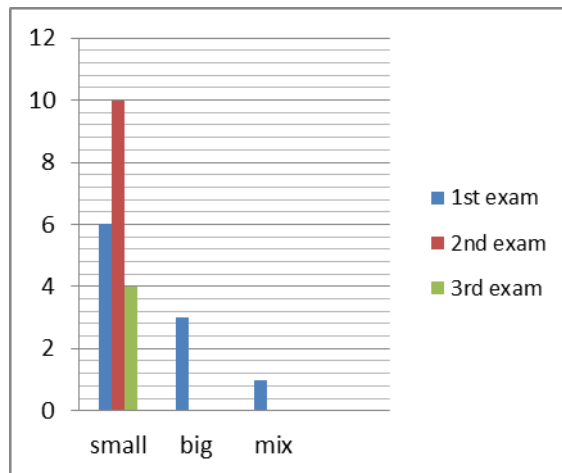


Fig. 14 The scales conditions of respondents in women with shampoo treatment

1. Examination data on the condition and number of scales in female respondents treated with coconut oil
 Table 12. Data on the nature of scales and number of scales in female respondents treated with coconut oil

No	Examination	∑ scales			Scale conditions		
		no	<5	>5	Small	Big	mix
1	1 st Exam	--	7	3	9	1	--
2	2 nd Exam	--	10	--	10	--	--
3	3 rd Exam	5	5	--	5	--	--

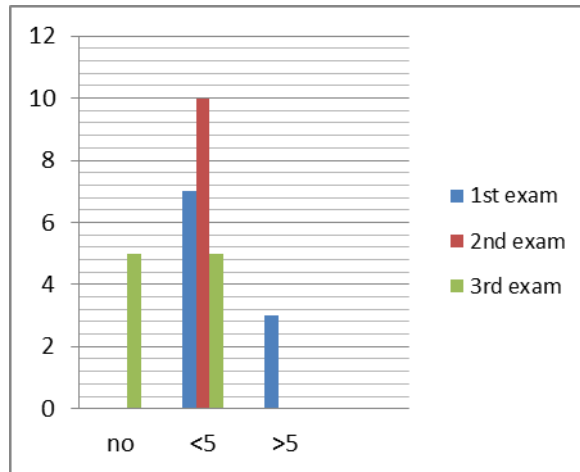


Fig. 15 The number of scales in female respondents treated with coconut oil

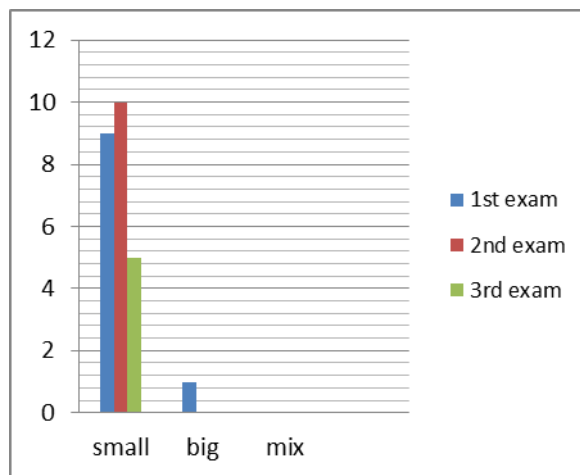


Fig.16 The scales conditions of respondents in women with coconut oil treatment

a. Mycological examination results.

In this study mycological examination was carried out to determine the type of fungus that causes dandruff. Specimens are taken from scales (squama) of the scalp. Examination with KOH and culture. Specimens were taken randomly from 8 respondents with the following details:

- a. 2 male respondents with shampoo treatment.
- b. 2 male respondents treated with coconut oil
- c. 2 female respondents with shampoo treatment
- d. 2 female respondents treated with coconut oil

The results of examination of 7 respondents is *Pityrosporum ovale*. While 1 responder found no fungus

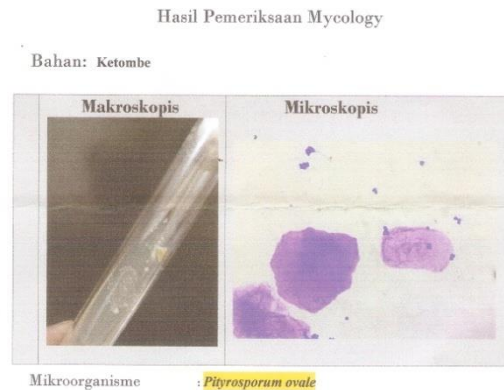


Fig. 17. Results of mycology test of squama of the scalp

VI. DISCUSSION

The results of this study explained several things:

- a. Based on random mycological examination, the cause of fungi from both respondents with oil or shampoo treatment showed that the cause was the same, *Pityrosporum ovale*
- b. Hair loss symptoms at the third examination showed better results in the respondents with coconut oil treatment for all respondents
- c. Symptoms of itching on the third examination showed the same results in all respondents and all treatments
- d. For the number and conditions of scales, the third examination showed better results in male respondents treated with oil. Whereas for female respondents showed better results in the treatment with shampoo.

VII. CONCLUSIONS AND SUGGESTIONS

a. Conclusions

Coconut oil with turmeric active ingredient as an antifungal has more or less the same effectiveness as ketoconazole 2% shampoo against complaints of itching, hair loss and scales caused by the fungus *Pityrosporum ovale* as a cause of dandruff

b. Suggestions

In the next research, it can be continued with an in vitro sensitivity test to find out how much anti-fungal properties against *Pityrosporum ovale*. And can also be further tested regarding the content of tumeric which has an effect as an anti-inflammatory and anti-fungal.

REFERENCES

- [1] C.J. Soegiharjo, 2013. Farmacognosi. PT. Citra Adi Parama . Yogyakarta.
- [2] Didik Gunawan, Sri Mulyani, 2008. Ilmu Obat Alam (Farmacognosi). Jilid 1. Penerbit Swadaya. Jakarta
- [3] Emma S. Wirakusumah, Rina Niwan Setyowati Niwan Setyowati, 2006. Cantik dan Bugar dengan Ramuan Nabati. Cetakan VI. PT. Penerbit Swadaya. Jakarta.
- [4] Grunwald J, 2008. PDR for Herbal Medicines, Second Edition. Medical Economics Company. New York
- [5] Ibunda Suparni, Ari Wulandari, 2013. Sehat dan Cantik Natural dengan Bahan – Bahan Alami. Rapha Publishing. Yogyakarta.
- [6] John Fedor, 2008. Milady's Standard Cosmetology. Thomson Delamar Learning. United States of America.
- [7] L.S. de Padua, N. Bunyapraphatsara, R.H.M.J. Lemmons, 2008. Plants Resources of South Asia. Prosea Foundation. Bogor.
- [8] Sjarif M. Wasitmaatmaja, 2012. Dermatologi Kosmetika. Edisi Kedua. Badan Penerbit Kedokteran Universitas Indonesia. Jakarta.
- [9] Wahyuning Setyani, Buku Ajar Farmakognosi. Program Studi D-3 Farmasi Stifar Yayasan Pharmasi Semarang